

We claim:

Claims

1 *Sub A'* 1. An isolated nucleic acid molecule including a sequence encoding an  
2 acquired resistance polypeptide, wherein said acquired resistance polypeptide is capable  
3 of conferring, on a plant expressing said polypeptide, resistance to a plant pathogen.

1 2. The isolated nucleic acid molecule of claim 1, wherein said polypeptide is  
2 capable of mediating the expression of a pathogenesis-related polypeptide.

1 3. The isolated nucleic acid molecule of claim 1, wherein said polypeptide  
2 comprises an ankyrin-repeat motif.

1 *Sub A2* 4. The isolated nucleic acid molecule of claim 1, wherein said polypeptide is  
2 obtained from an angiosperm.

1 5. The isolated nucleic acid molecule of claim 4, wherein said angiosperm is a  
2 member of the *Solanaceae*.

1 6. The isolated nucleic acid molecule of claim 4, wherein said angiosperm is a  
2 member of the *Cruciferae*.

1 7. The isolated nucleic acid molecule of claim 1, wherein said nucleic acid  
2 molecule is genomic DNA.

1 8. The isolated nucleic acid molecule of claim 1, wherein said nucleic acid  
2 molecule is cDNA.

1                   9. The isolated nucleic acid molecule of claim 1, wherein said plant pathogen  
2    is a bacterium, virus, viroid, fungus, nematode, or insect.

*Sub A3*  
1                   10. An isolated nucleic acid molecule that encodes an acquired resistance  
2    polypeptide that specifically hybridizes to a nucleic acid molecule comprising the  
3    genomic nucleic acid sequence of Fig. 4 (SEQ ID NO:1).

1                   11. An isolated nucleic acid molecule that encodes an acquired resistance  
2    polypeptide that specifically hybridizes to a nucleic acid molecule comprising the cDNA  
3    of Fig. 5 (SEQ ID NO:2).

1                   12. An isolated nucleic acid molecule that encodes an acquired resistance  
2    polypeptide that specifically hybridizes to a nucleic acid molecule comprising the DNA  
3    sequence of Fig. 7A (SEQ ID NO:13).

1                   13. The isolated nucleic acid molecule of claims 10-12, wherein said nucleic  
2    acid molecule encodes a polypeptide that mediates the expression of a pathogenesis-  
3    related polypeptide.

1                   14. The isolated nucleic acid molecule of claims 10-12, wherein said nucleic  
2    acid molecule encodes a polypeptide comprising an ankyrin-repeat motif.

*Sub A4*  
1                   15. The isolated nucleic acid molecule of claim 1 or 10-12, wherein said  
2    nucleic acid molecule is operably linked to an expression control region.

1                   16. A vector comprising the nucleic acid molecule of claim 1 or 10-12, said  
2    vector being capable of directing expression of the polypeptide encoded by said nucleic  
3    acid molecule.

1           17. A cell comprising an isolated nucleic acid molecule of claim 1, 10-12, or  
2       16.

1           18. The cell of claim 17, wherein said cell is a plant cell.

1           19. The cell of claim 17, wherein said cell is a bacterial cell.

1           20. The cell of claim 19, wherein said bacterial cell is *Agrobacterium*.

1           21. The cell of claim 18, wherein said plant cell has increased resistance to a  
2       plant pathogen.

1           22. A transgenic plant comprising a nucleic acid molecule of claim 1, 10-12,  
2       or 16, wherein said nucleic acid molecule is expressed in said transgenic plant.

1           23. The transgenic plant of claim 22, wherein said transgenic plant is an  
2       angiosperm.

1           24. The transgenic plant of claim 22, wherein said transgenic angiosperm is a  
2       dicot.

1           25. The transgenic plant of claim 24, wherein said dicot is a cruciferous plant.

1           26. The transgenic plant of claim 24, wherein said dicot is a solanaceous  
2       plant.

1           27. The transgenic plant of claim 23, wherein said transgenic angiosperm is a  
2           monocot.

*Sub A5*  
1           28. A seed from a transgenic plant of claim 22.

1           29. A cell from a transgenic plant of claim 22.

1           30. A substantially pure acquired resistance polypeptide including an amino  
2           acid sequence that has at least 40% identity to the amino acid sequence of Fig. 5 (SEQ ID  
3           NO:3) or Fig. 7B (SEQ ID NO:14).

1           31. The of substantially pure polypeptide claim 30, wherein said polypeptide  
2           is capable of mediating the expression of a pathogenesis-related polypeptide.

1           32. The substantially pure polypeptide of claim 30, wherein said polypeptide  
2           includes an ankyrin-repeat motif or a G-protein coupled receptor motif.

1           33. The substantially pure polypeptide of claim 30, wherein said polypeptide  
2           is obtained from an angiosperm.

1           34. The substantially pure polypeptide of claim 33, wherein said angiosperm  
2           is a member of the *Solanaceae*.

1           35. The substantially pure polypeptide of claim 33, wherein said angiosperm  
2           is a member of the *Cruciferae*.

*Sub A6*  
1           36. A method of producing an acquired resistance polypeptide, said method  
2           comprising the steps of:

- 1 (a) providing a cell transformed with a nucleic acid molecule of claim 1;
- 2 10-12, or 16 positioned for expression in the cell;
- 3 (b) culturing the transformed cell under conditions for expressing the nucleic
- 4 acid molecule; and
- 5 (c) recovering the acquired resistance polypeptide.

1                   37. A recombinant acquired resistance polypeptide produced by the method  
2    of claim 31.

1                   38. A substantially pure antibody that specifically recognizes and binds to an  
2   acquired resistance polypeptide or a portion thereof.

1                   39. The substantially pure antibody of claim 38, wherein said antibody  
2   recognizes and binds to a recombinant acquired resistance polypeptide or a portion  
3   thereof.

1 *A7* 40. A method of providing an increased level of resistance against a disease  
2 caused by a plant pathogen in a transgenic plant, said method comprising the steps of:  
3 (a) producing a transgenic plant cell including the nucleic acid molecule of  
4 claim 1, 10-12, or 16 wherein said nucleic acid is positioned for expression in the plant  
5 cell; and

(b) growing a transgenic plant from the plant cell wherein the nucleic acid molecule is expressed in the transgenic plant and the transgenic plant is thereby provided with an increased level of resistance against a disease caused by a plant pathogen.

1                   41. The method of claim 40, wherein said plant pathogen is a bacterium,  
2                   virus, viroid, fungus, nematode, or insect.

1           42. The method of claim 40, wherein said plant pathogen is *Phytophthora*,  
2   *Peronospora*, or *Pseudomonas*.

1           43. A method of isolating an acquired resistance gene or fragment thereof,  
2   said method comprising the steps of:  
3           (a) contacting the nucleic acid molecule of Fig. 4 (SEQ ID NO:1), Fig. 5 (SEQ  
4   ID NO:2), or Fig. 7A (SEQ ID NO:13) or a portion thereof with a preparation of DNA  
5   from a plant cell under hybridization conditions providing detection of DNA sequences  
6   having at least 40% or greater sequence identity to the nucleic acid sequence of Fig. 4  
7   (SEQ ID NO:1), Fig. 5 (SEQ ID NO:2), or Fig. 7A (SEQ ID NO:13); and  
8           (b) isolating said hybridizing DNA.

1           44. A method of isolating an acquired resistance gene or fragment thereof,  
2   said method comprising the steps of:  
3           (a) providing a sample of plant cell DNA;  
4           (b) providing a pair of oligonucleotides having sequence identity to a region  
5   of the nucleic acid of Fig. 4 (SEQ ID NO:1), Fig. 5 (SEQ ID NO:2), or Fig. 7A (SEQ ID  
6   NO:13);  
7           (c) contacting the pair of oligonucleotides with said plant cell DNA under  
8   conditions suitable for polymerase chain reaction-mediated DNA amplification; and  
9           (d) isolating the amplified acquired resistance gene or fragment thereof.

1           45. The method of claim 44, wherein said amplification step is carried out  
2   using a sample of cDNA prepared from a plant cell.

1           46. The method of claim 44, wherein said pair of oligonucleotides are based

- 1 on a sequence encoding an acquired resistance polypeptide, wherein the acquired
- 2 resistance polypeptide is at least 40% identical to the amino acid sequence of Fig. 5 (SEQ
- 3 ID NO:3) or Fig. 7B (SEQ ID NO:14).

add  
F-W?